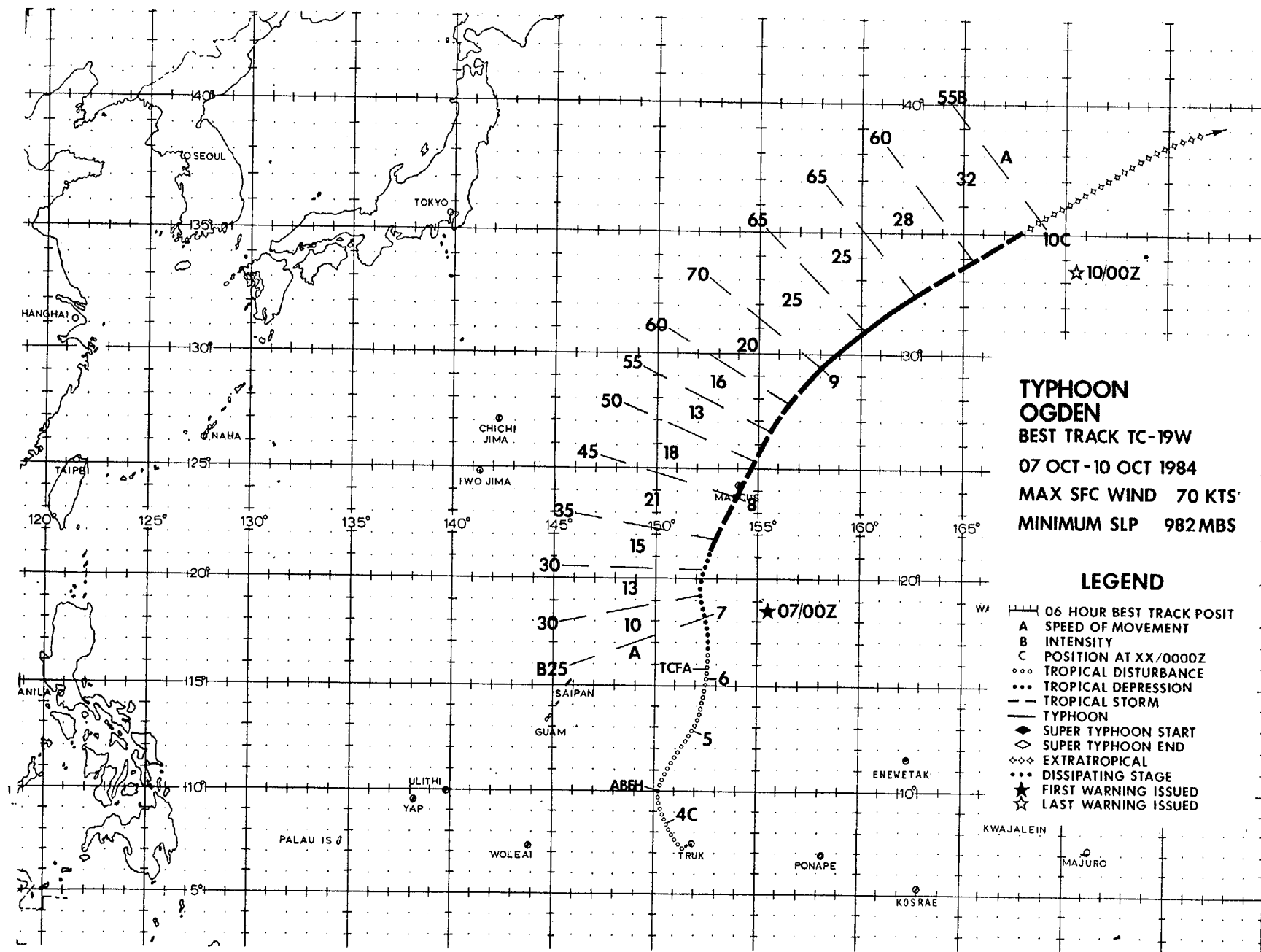


08



# TYPHOON OGDEN (19W)

Typhoon Ogden was the first of a series of eight tropical cyclones during the month of October which established a new record for northwest Pacific tropical cyclone activity for that month. Ogden like the two storms before it, moved almost due north from the time it developed until it began to recurve. Ogden had great difficulty in becoming vertically aligned and would probably never have attained typhoon intensity if it had not accelerated after recurvature thereby adding the translation speed of movement to the storm's wind field.

The disturbance that developed into the eighth typhoon of the season was initially detected as a weak surface circulation west of Truk (WMO 91334) on the 3rd of October. No significant convection directly associated with the circulation was evident on satellite imagery at the time. The disturbance moved to the northwest over the next 18 hours and became part of the eastward extension of the resurging southwest monsoon trough. Synoptic data at 040000Z indicated a 10 to 20 kt (5 to 10 m/s) surface circulation was present, with an MSLP near 1008 mb. The persistence of the circulation prompted its inclusion in the 040600Z Significant Tropical Weather Advisory (ABEH PGTW).

The monsoon trough began to extend northwestward on the 4th as it had a week earlier when Tropical Storms Maury and Nina developed. As the circulation became embedded in the trough, the disturbance followed the trough orientation and tracked to the northeast. Some poorly organized convection associated with the surface circulation could now be detected on satellite imagery. Upper-level flow up to this time was weak but generally diffluent.

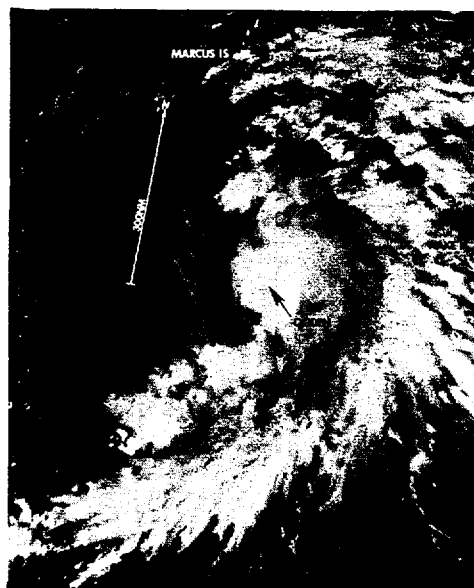
On 5 October, the convection indicated a further improvement in organization and was now consolidating in the northeast

periphery of the monsoon trough, several degrees northeast of the surface circulation. An upper-level anticyclone was also observed to be developing over the disturbance. Early on the 6th, the convection moved slightly southwest and continued to increase in size and organization. This brought the low-level circulation in closer proximity to the mid and upper-level features.

It was determined from sparse synoptic data at 060000Z that the circulation had turned more northward with an MSLP likely below 1004 mb. This led to the issuance of a TCFA at 060400Z. At 060600Z, a ship near the disturbance's center reported a 1002 mb pressure to confirm the earlier analysis.

The first of seven aircraft reconnaissance flights into Ogden occurred early on 6 October. A surface center was not located but a sharp low-level trough oriented northeast to southwest with an MSLP of 1000 mb was evident. Maximum sustained winds of 20 kt (10 m/s) were reported southeast of the trough axis. The second aircraft reconnaissance mission closed-off a circulation center at 062227Z with an MSLP of 999 mb and reported 15 kt (8 m/s) winds near the broad center. Winds of 35 kt (18 m/s) were found approximately 170 nm (315 km) east-northeast of the center associated with the tight pressure gradient between the developing Ogden and the subtropical ridge to the northeast. Intensity estimates from satellite analysis at this time indicated surface winds of 25 kt (13 m/s) were present. Although the disturbance was still located within the monsoon trough, satellite data indicated the system was moving north and separating from the trough. This in combination with the aircraft data prompted the issuance of the first warning on Ogden as a 25 kt (13 m/s) tropical depression at 070000Z (Figure 3-19-1).

Figure 3-19-1. Ogden at the time the first warning was issued. Dvorak intensity analysis indicated that 25 kt (13 m/s) surface winds were present (070000Z October DMSP visual imagery).



Over the next 24 hours, Ogden tracked around the southwest periphery of the mid-Pacific ridge. The ridge was retreating eastward in advance of a mid-latitude trough approaching from Japan. Although the first four JTWC warnings forecast eventual recurvature to the northeast, the actual recurvature was much sharper than anticipated, with significant acceleration occurring during the first twenty-four hours of the forecast period. This was due to the mid-latitude trough moving east faster than anticipated, resulting in a more rapid retreat of the mid-Pacific ridge. This quickly put Ogden under a southwesterly steering flow.

At approximately 071600Z, Ogden obtained tropical storm intensity. At this time, Ogden was already accelerating to the northeast. Part of the storm's intensification during the next 30 hours would be a result of the forward translational speed being added to the true wind speed. This would consistently put the stronger winds in the southeast semicircle.

The only land affected by Ogden was Marcus Island (Minami Tori-Shima (WMO

47991)). Ogden passed just to the east of the island at approximately 080200Z. The island was subjected to the weaker, northwest semicircle of the storm, and as a result, no damage was reported. The highest known wind occurred at 080000Z when northeast winds of 27 kt (14 m/s) were observed. At the same time the sea-level pressure was 990.3 mb. Only two hours earlier, aircraft reconnaissance reported an MSLP in Ogden of 993 mb. This suggests that the intensifying surface center passed very close to the island.

At 1200Z on 8 October, the mid-latitude westerlies began to accelerate Ogden to the northeast in earnest and Ogden began its transition to an extratropical low as it attained typhoon intensity (Figure 3-19-2). A combination of the extratropical transition and a 20 kt (37 km/hr) northeast movement contributed to an expanded asymmetric wind field and to the typhoon force winds in the southeast semicircle. Aircraft reconnaissance at 082132Z reported 70 kt (36 m/s) surface winds 30 nm (56 km) from the surface center in the southwest and southeast quadrants.

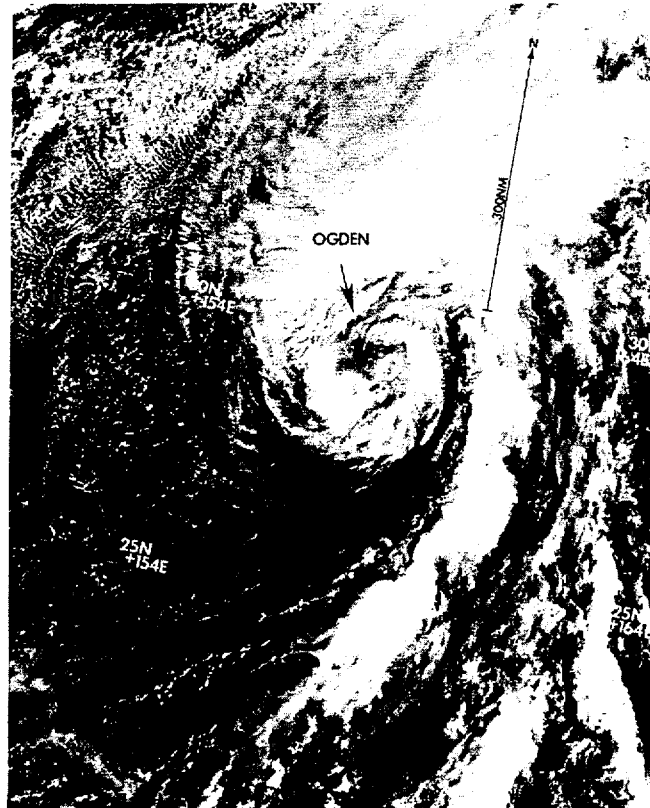


Figure 3-19-2. Typhoon Ogden near maximum intensity. Ogden was already beginning its extratropical transition at this time (082321Z October DMSP visual imagery).

The ARWO also verified that extratropical transition had commenced. Stratiform clouds were observed in the surface center and a 10 nm (19 km) northeast tilt was present from the surface to the 700 mb center. In addition, the measured MSLP was only 993 mb. This would normally support winds of 55 kt (28 m/s) according to Atkinson-Holliday (1977) pressure-wind curve. This discontinuity is often observed during extratropical transition.

The southwesterlies continued to shear Ogden as it accelerated to the northeast, further separating the 700 mb and upper-level centers from the surface center. Ogden weakened to tropical storm strength approximately twenty-four hours after it obtained typhoon strength, even though

maximum sustained winds of 77 kt (40 m/s) were indicated from satellite imagery. The satellite intensity estimates at this time were based on the Dvorak model of a subtropical system. Consequently, Ogden's 25 kt (46 km/hr) movement was directly added to the initial model intensity. It was apparent on satellite imagery at 0000Z on 10 October that Ogden had lost all convection and had completed its extratropical transition. It still supported 55 kt (28 m/s) winds and had a 32 kt (59 km/hr) northeast movement. At this time, the final warning was issued. The upper-level center was located more than one degree northeast of the surface center based on satellite imagery. The remains of Ogden continued northeast towards the International Dateline as an extratropical storm.